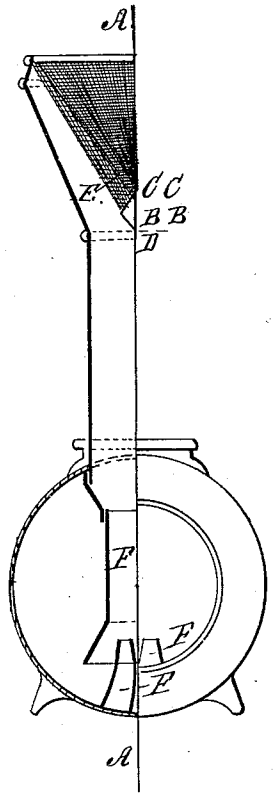
Marks & Eaton,

Spark Arrester.

No. 36,619. Patented Oct. 7, 1862.



Witnesses;
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UNITED STATES PATENT OFFICE.

JOSEPH MARKS AND RICHARD EATON, OF HAMILTON, CANADA.

IMPROVED SPARK-ARRESTER.

Specification forming part of Letters Patent No. **36,619**, dated October 7, 1862.

To all whom it may concern:

Be it known that we, JOSEPH MARKS, of Abergavenny, South Wales, and RICHARD EATON, of the city of London, England, mechanical engineers, now temporarily residing in the Province of Canada, have invented certain Improvements in the Construction of Smoke-Stacks and Spark-Arresters for Locomotives and other Steam-Engines; and we do hereby declare that the following is a full and exact description thereof.

The improvements consist, first, in the use of two or more conical diaphragms of gauze-wire netting or perforated plates held at a convenient distance from each other in the stack; second, in the use of a central cone, by means of which the sparks which escape through the lower nettings are allowed to return into the chimney, and by the action of the exhaust-steam are further reduced in size and extinguished before being finally ejected into the atmosphere.

The annexed drawings show the construction of the improved stack, wherein A A is a transverse section of the chimney and B B is the lower and C C the upper conical netting. The lower netting, B B, is provided with a central aperture at its lowest point, into which is inserted the solid double cone-piece D, which is so constructed that while leaving an annular passage for the sparks to fall back into the chimney, it yet prevents the exhaust-steam and sparks from striking through the bottom aperture into the space between the nettings E E.

F F F are the ordinary exhaust and lifting pipes.

The advantages of this mode of construction are: first, no injurious obstruction or deflection is offered to the exhaust-steam; second, the conical surface of the cone-nettings tends to prevent the direct passage of the sparks into the atmosphere as well as to grind up the sparks themselves as they are passed and repassed along the netting by the action of the steam; third, by the use of two or more nettings placed apart from each other the velocity and consequent tendency to escape into the atmosphere is checked, and at the same time provision is made for the larger and more dangerous sparks being returned into the chimney; fourth, as a consequence of the above-mentioned improvements a much coarser netting may be used than is now common, whereby not only is a much freer exit allowed to the exhaust-steam, but whenever necessary the engine can be worked indiscriminately either with coal or wood as fuel without running the risk of the netting being stopped by the coal, or of dangerous sparks being given off when wood is used. It will also be seen that owing to the diminished resistance offered to the exit of the exhaust-steam as compared with the ordinary stacks, a corresponding resistance against the piston is removed, resulting in a considerable economy of the consumption of fuel; also, by the use of the series of nettings a much more perfect spark-arrester is obtained, and, finally, we can use either coal or wood as fuel in the same engine without any alteration being required in the smoke-stack.

We do not intend to confine ourselves to the precise shape and arrangement shown in the drawings, as it is obvious that many modifications can and must be made to suit various kinds of engines, such as varying the number and shape of the conical nettings or reversing the position of the cones when applied to the old smoke-stack, or of using two or more flat or bent diaphragms of wire-gauze or perforated plates placed above or within each other, so as that one shall protect the other in the same manner as when cones are used, without departing from our invention.

What we claim as our invention, and wish to be secured to us by Letters Patent, is—

1. The perforated or gauze cones B B and C C, in combination with the outer shell of the smoke-stack, when the former is arranged within the latter, as described.

2. The double cone-piece D, arranged in the lower open end of the perforated or gauze cone B B, so as to deflect a portion of the sparks, which escape through the perforations or meshes of the cone B B through an annular space at the bottom thereof into and against the inner sides of the chimney or smoke-stack, substantially as described.

Hamilton, August 2, 1862.

JOSEPH MARKS.
RICHARD EATON.

Witnesses:
M. O'REILLY, *N. P.*,
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